What is claimed is:

1. A software updating system, comprising:

a plurality of update data supplying apparatuses for supplying update confirmation information regarding the presence or absence of updates for predetermined software via a network;

an electronic device for executing a process in accordance with said update confirmation information supplied from said update data supplying apparatus, wherein

said electronic device includes:

judging means for judging whether or not, among installed software, there exists software for which the presence of updates needs to be confirmed;

detection means for detecting said update data supplying apparatus to which an inquiry is to be made on the presence of updates for said software for which said judging means has judged a confirmation to be necessary;

inquiring means for making an inquiry on the presence of updates for said software to said update data supplying apparatus detected by said detection means; and

execution means for executing a process based on said update confirmation information supplied from said update data supplying apparatus in response to said inquiry made by said inquiring means, and

said update data supplying apparatus includes:

confirmation means for confirming the presence or absence of updates for said software regarding which there was an inquiry on the presence of updates by said inquiring means of said electronic device; and

supplying means for supplying to said electronic device said update confirmation information in accordance with a confirmation result by said confirmation means.

Related Pending Application
Related Case Serial No: 10/694,777
Related Case Filing Date: 10-29-03

FOR INFORMATION DISCLOSURE PURPOSES ONLY

2. The software updating system according to claim 1, wherein said update confirmation information is one of update data for updating said software and information indicating the presence or absence of updates.

3. The software updating system according to claim 1, wherein said electronic device further comprises storage means for storing an update confirmation cycle for said installed software, and

said judging means judges whether or not, among said installed software, there exists software for which the presence of updates needs to be confirmed based on said update confirmation cycle.

4. The software updating system according to claim 1, wherein said judging means of said electronic device judges all of said installed software to be software for which the presence of updates needs to be confirmed when a predetermined event occurs.

5. The software updating system according to claim 4, wherein said event is one of the turning on of the power of said electronic device and the arrival of a predetermined time.

6. The software updating system according to claim 1, wherein after said update data supplying apparatus is detected by said detection means, said inquiring means of said electronic device waits until a predetermined time and makes an inquiry on the presence of updates for said software.

7. An information processing apparatus which executes a process in accordance with update confirmation information supplied from a plurality of update data supplying apparatuses that supply via a network said update confirmation information regarding the presence or absence of updates for predetermined software, comprising:

judging means for judging whether or not, among installed software, there exists software for which the presence of updates needs to be confirmed;

detection means for detecting said update data supplying apparatus to which an inquiry is to be made on the presence of updates for said software for which said judging means has judged a confirmation to be necessary;

inquiring means for making an inquiry on the presence of updates for said software to said update data supplying apparatus detected by said detection means; and

execution means for executing a process based on said update confirmation information supplied from said update data supplying apparatus in response to said inquiry made by said inquiring means.

8. An information processing method of an information processing apparatus which executes a process in accordance with update confirmation information supplied from a plurality of update data supplying apparatuses that supply via a network said update confirmation information regarding the presence or absence of updates for predetermined software, comprising the steps of:

judging whether or not, among installed software, there exists software for which the presence of updates needs to be confirmed;

detecting said update data supplying apparatus to which an inquiry is to be made on the presence of updates for said software for which a confirmation has been judged to be necessary in said judging step;

making an inquiry on the presence of updates for said software to said update data supplying apparatus detected in said detection step; and

executing a process based on said update confirmation information supplied from said update data supplying apparatus in response to said inquiry made in said step of making said inquiry.

9. A recording medium in which is recorded a computer readable program for an information processing apparatus which executes a process in accordance with update confirmation information supplied from a plurality of update data supplying apparatuses that supply via a network said update confirmation information regarding the presence or absence of updates for predetermined software, said program comprising:

a judging control step for controlling the judgment as to whether or not, among installed software, there exists software for which the presence of updates needs to be confirmed;

a detection control step for controlling the detection of said update data supplying apparatus to which an inquiry is to be made on the presence of updates for said software for which a confirmation has been judged to be necessary in said judging control step;

an inquiry control step for controlling the making of an inquiry on the presence of updates for said software to said update data supplying apparatus detected in said detection control step; and

an execution control step for controlling the execution of a process based on said update confirmation information supplied from said update data supplying apparatus in response to said inquiry made in said inquiry control step.

10. A program for an information processing apparatus which executes a process in accordance with update confirmation information supplied from a plurality of update data supplying apparatuses that supply via a network said update confirmation information regarding the presence or absence of updates for predetermined software, wherein said program makes a computer execute a process, comprising:

a judging control step for controlling the judgment as to whether or not, among installed software, there exists software for which the presence of updates needs to be confirmed;

a detection control step for controlling the detection of said update

data supplying apparatus to which an inquiry is to be made on the presence of updates for said software for which a confirmation has been judged to be necessary in said judging control step;

an inquiry control step for controlling the making of an inquiry on the presence of updates for said software to said update data supplying apparatus detected in said detection control step; and

an execution control step for controlling the execution of a process based on said update confirmation information supplied from said update data supplying apparatus in response to said inquiry made in said inquiry control step.

11. A software updating system, comprising:

a plurality of update data supplying apparatuses for supplying update confirmation information regarding the presence or absence of updates for predetermined software via a network;

a first electronic device for executing a process in accordance with said update confirmation information; and

a second electronic device for supplying to said first electronic device said update confirmation information supplied from said update data supplying apparatus, wherein

said first electronic device includes:

judging means for judging whether or not, among installed software, there exists software for which the presence of updates needs to be confirmed;

detection means for detecting said update data supplying apparatus to which an inquiry is to be made on the presence of updates for said software for which said judging means has judged a confirmation to be necessary;

request means for making a request to said second electronic device to make an inquiry to said update data supplying apparatus detected by said detection means on the presence of updates for

said software; and

execution means for executing a process based on said update confirmation information supplied from said second electronic device in response to said request made by said request means,

said second electronic device includes:

inquiring means for making an inquiry, in response to said request made by said request means of said first electronic device, on the presence of updates for said software to said update data supplying apparatus detected by said detection means; and

first supplying means for supplying to said first electronic device said update confirmation information supplied from said update data supplying apparatus in response to said inquiry made by said inquiry means, and

said update data supplying apparatus includes:

confirmation means for confirming the presence or absence of updates for said software regarding which there was an inquiry on the presence of updates by said inquiring means of said second electronic device; and

second supplying means for supplying to said second electronic device said update confirmation information in accordance with a confirmation result by said confirmation means.

ABSTRACT OF THE DISCLOSURE

It is made possible to update installed software appropriately. A CE device stores an update management table in which are set, with respect to software bundled with the CE device, the names, IDs, version numbers, update cycles, and contact information (URLs of update data supplying servers) for making inquiries on the presence of updates. For example, assuming that everyday, when it is recognized that the time is past 10:00, there is a need to check for the presence of updates for software A, the CE device accesses a URL corresponding to software A, and makes an inquiry on the presence of updates.

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JAN 28 2004
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FIG. 1

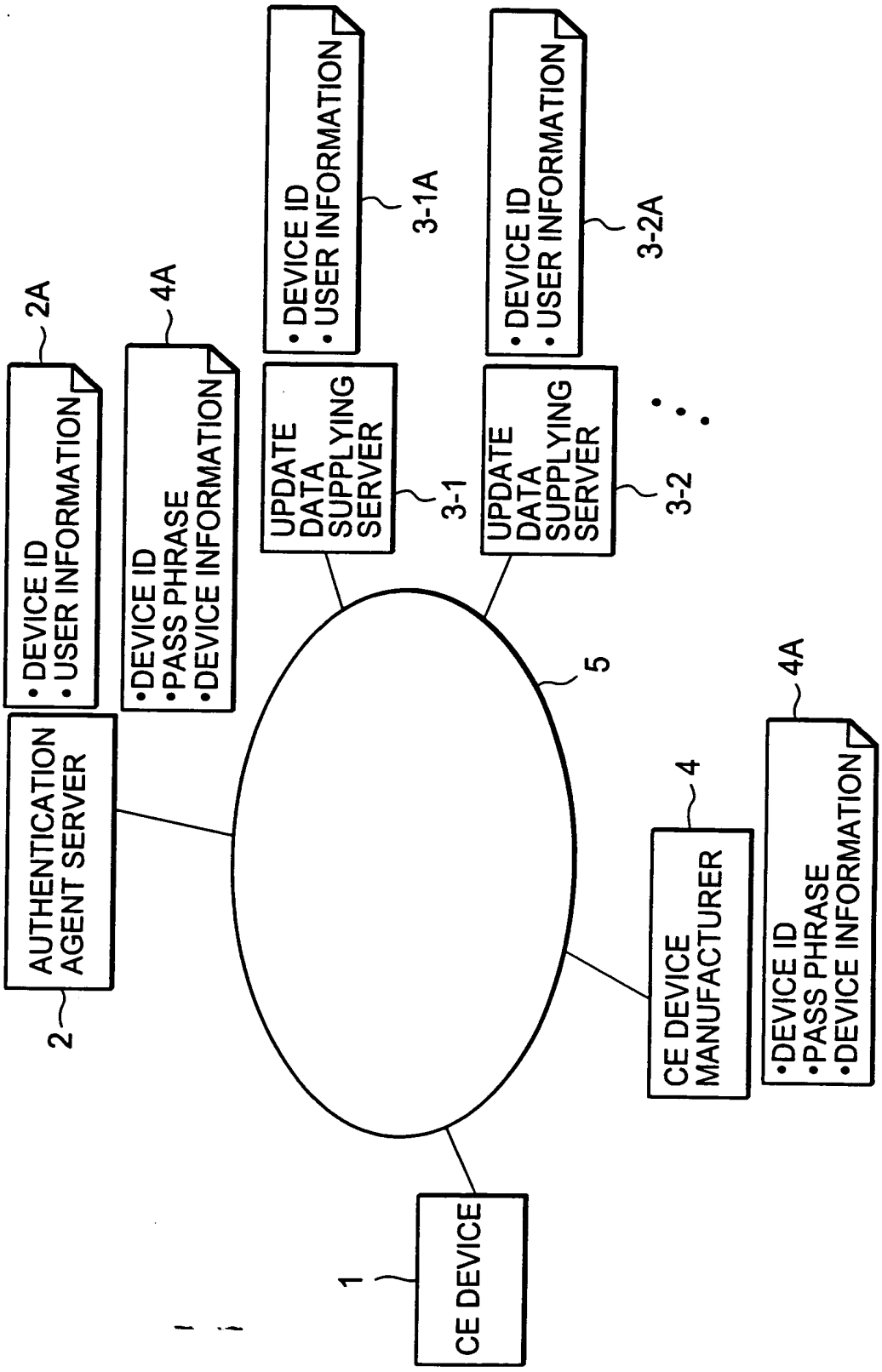


FIG. 2

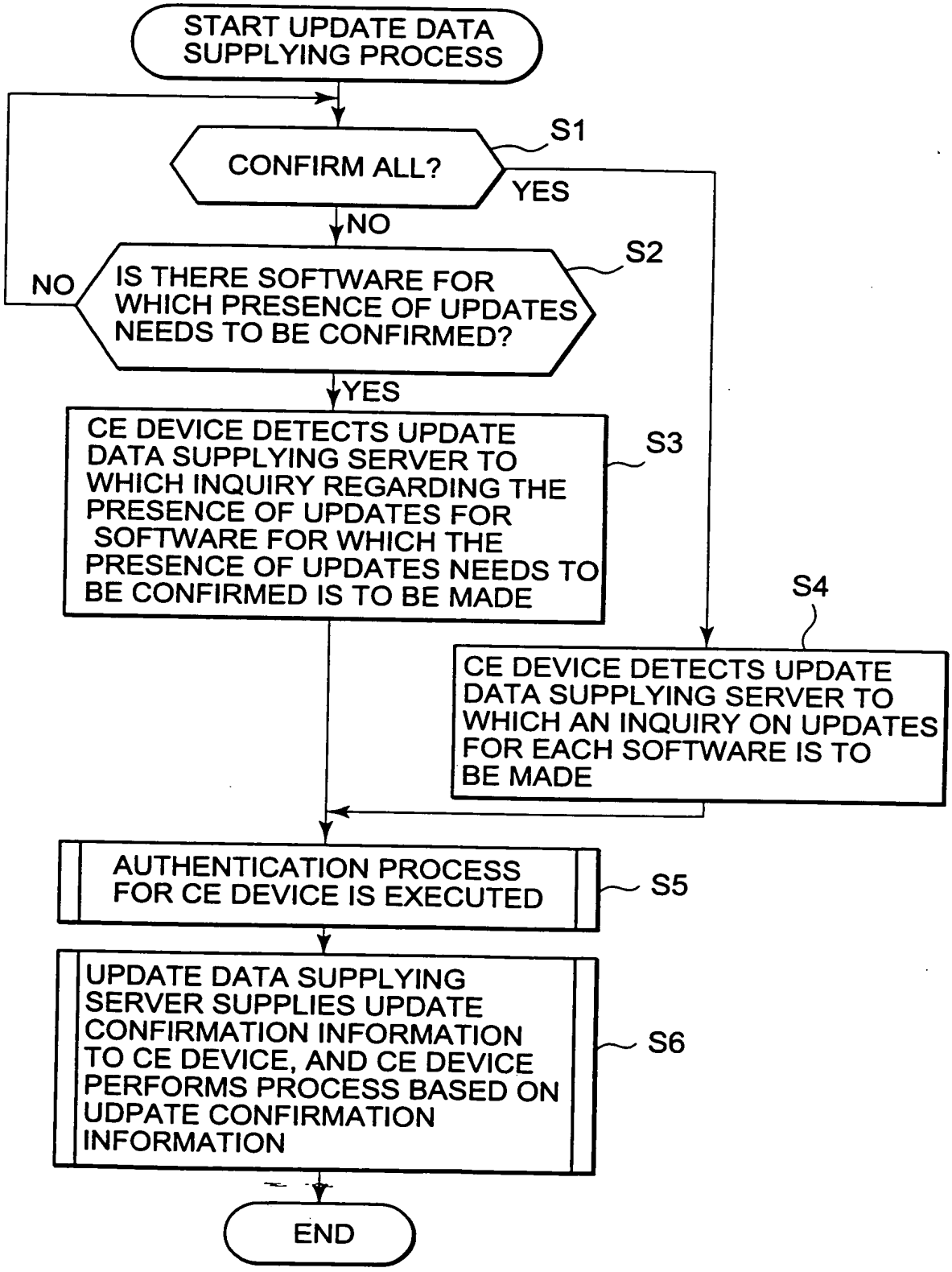

START UPDATE DATA SUPPLYING PROCESS
CONFIRM ALL?
S1
YES
NO
IS THERE SOFTWARE FOR WHICH PRESENCE OF UPDATES NEEDS TO BE CONFIRMED?
S2
NO
YES
CE DEVICE DETECTS UPDATE DATA SUPPLYING SERVER TO WHICH INQUIRY REGARDING THE PRESENCE OF UPDATES FOR SOFTWARE FOR WHICH THE PRESENCE OF UPDATES NEEDS TO BE CONFIRMED IS TO BE MADE
S3
S4
CE DEVICE DETECTS UPDATE DATA SUPPLYING SERVER TO WHICH AN INQUIRY ON UPDATES FOR EACH SOFTWARE IS TO BE MADE
AUTHENTICATION PROCESS FOR CE DEVICE IS EXECUTED
S5
UPDATE DATA SUPPLYING SERVER SUPPLIES UPDATE CONFIRMATION INFORMATION TO CE DEVICE, AND CE DEVICE PERFORMS PROCESS BASED ON UDPATE CONFIRMATION INFORMATION
S6
END

FIG. 3

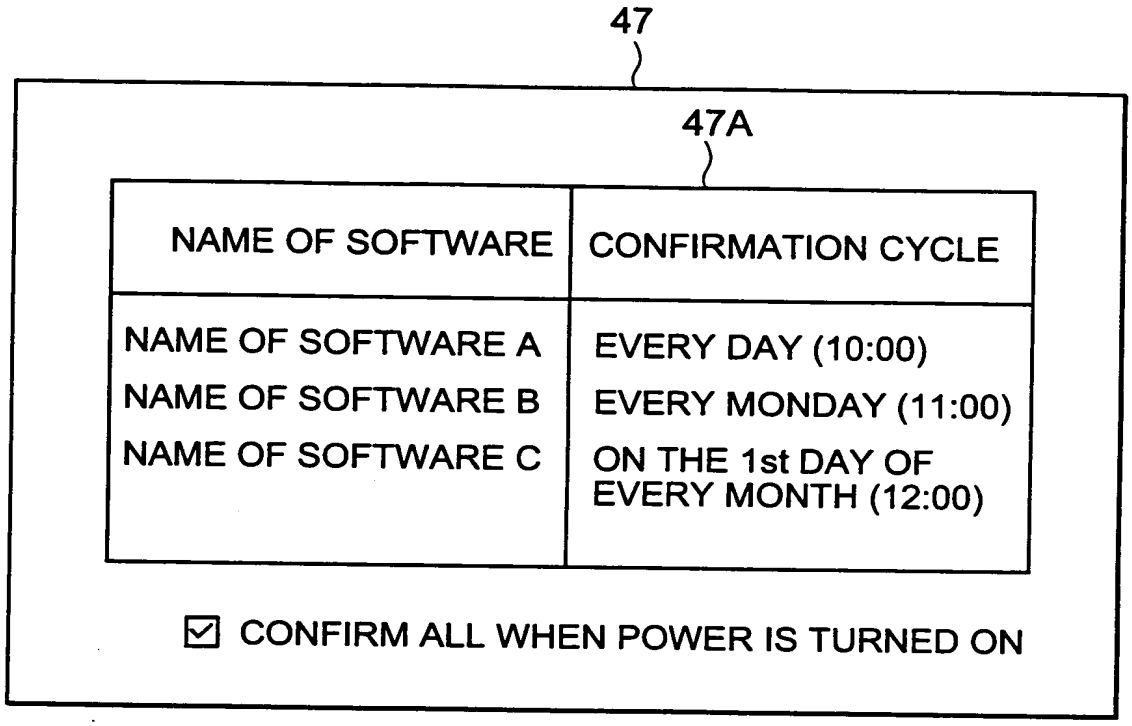

47
47A
NAME OF SOFTWARE
CONFIRMATION CYCLE
NAME OF SOFTWARE A
NAME OF SOFTWARE B
NAME OF SOFTWARE C
EVERY DAY (10:00)
EVERY MONDAY (11:00)
ON THE 1st DAY OF EVERY MONTH (12:00)
☑ CONFIRM ALL WHEN POWER IS TURNED ON

FIG. 4

NAME OF SOFTWARE	SOFTWARE ID	VERSION NUMBER	CONFIRMATION CYCLE	URL OF UPDATE DATA SUPPLYING SERVER
NAME OF SOFTWARE A	XXXXX	XX	EVERY DAY (10:00)	XXXX
NAME OF SOFTWARE B	XXXXX	XX	EVERY MONDAY (11:00)	XXXX
NAME OF SOFTWARE C	XXXXX	XX	ON THE 1st DAY OF EVERY MONTH (12:00)	XXXX

FIG. 5

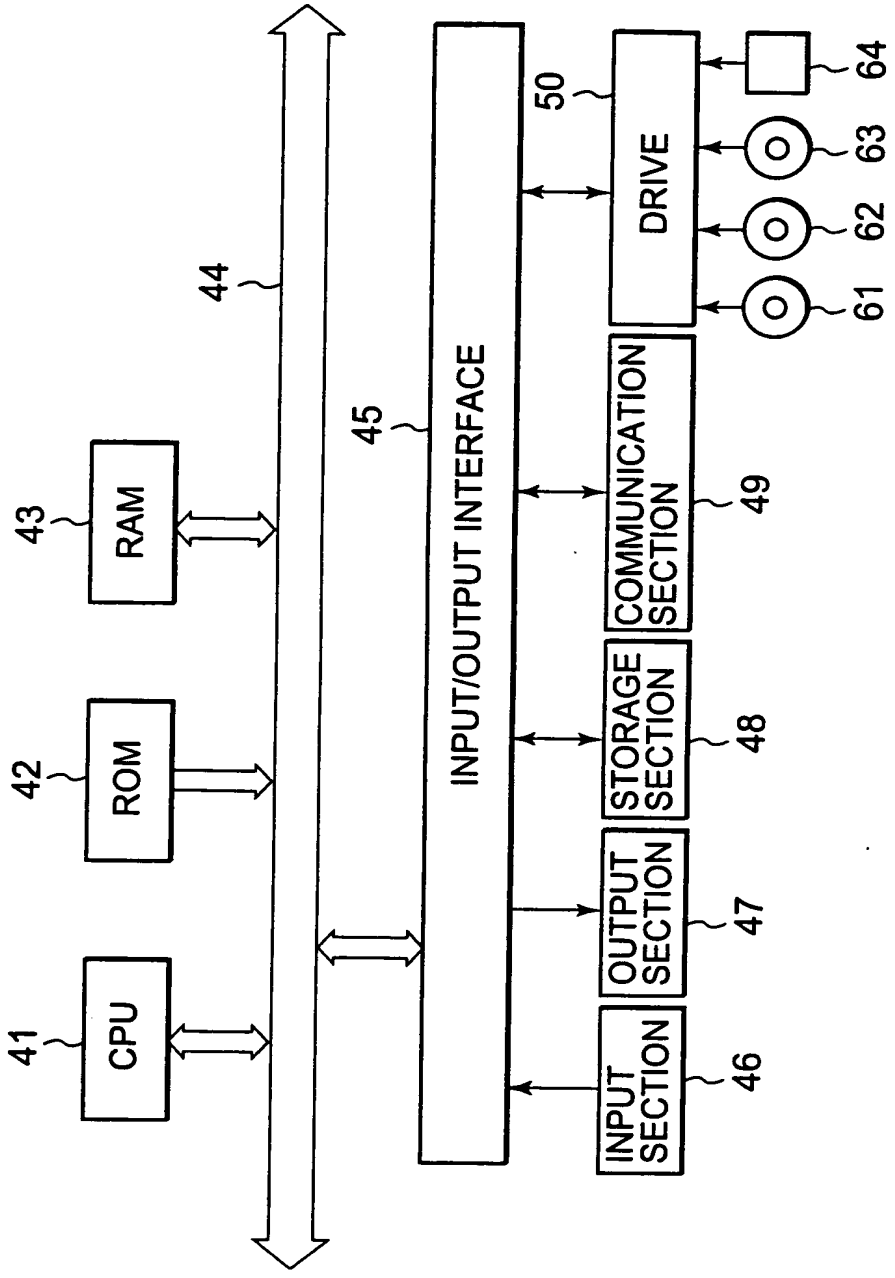

41
CPU
42
ROM
43
RAM
44
45
INPUT/OUTPUT INTERFACE
46
INPUT SECTION
47
OUTPUT SECTION
48
STORAGE SECTION
49
COMMUNICATION SECTION
50
DRIVE
61
62
63
64

FIG. 6

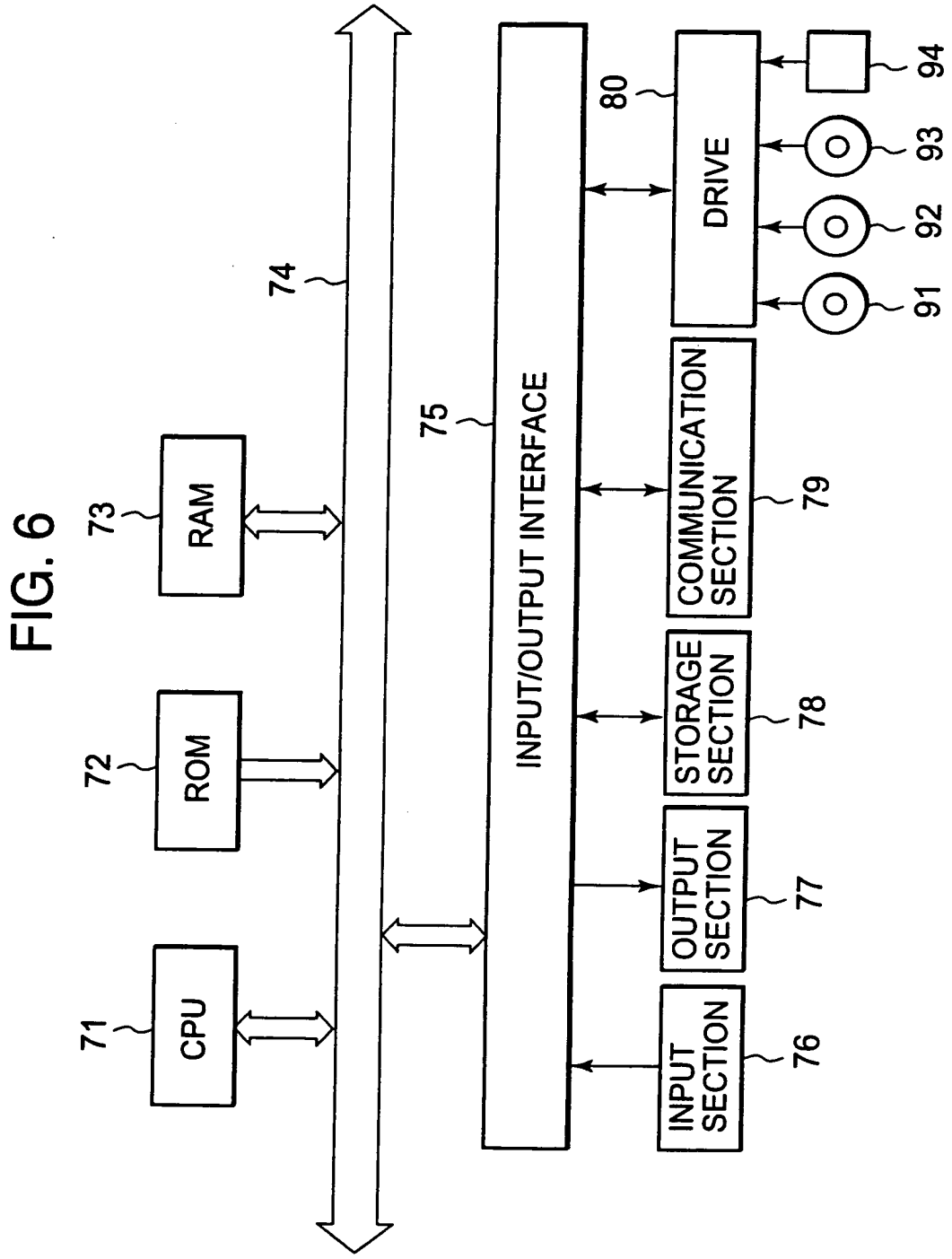

71
CPU
72
ROM
73
RAM
74
75
INPUT/OUTPUT INTERFACE
76
INPUT SECTION
77
OUTPUT SECTION
78
STORAGE SECTION
79
COMMUNICATION SECTION
80
DRIVE
91
92
93
94

FIG. 7

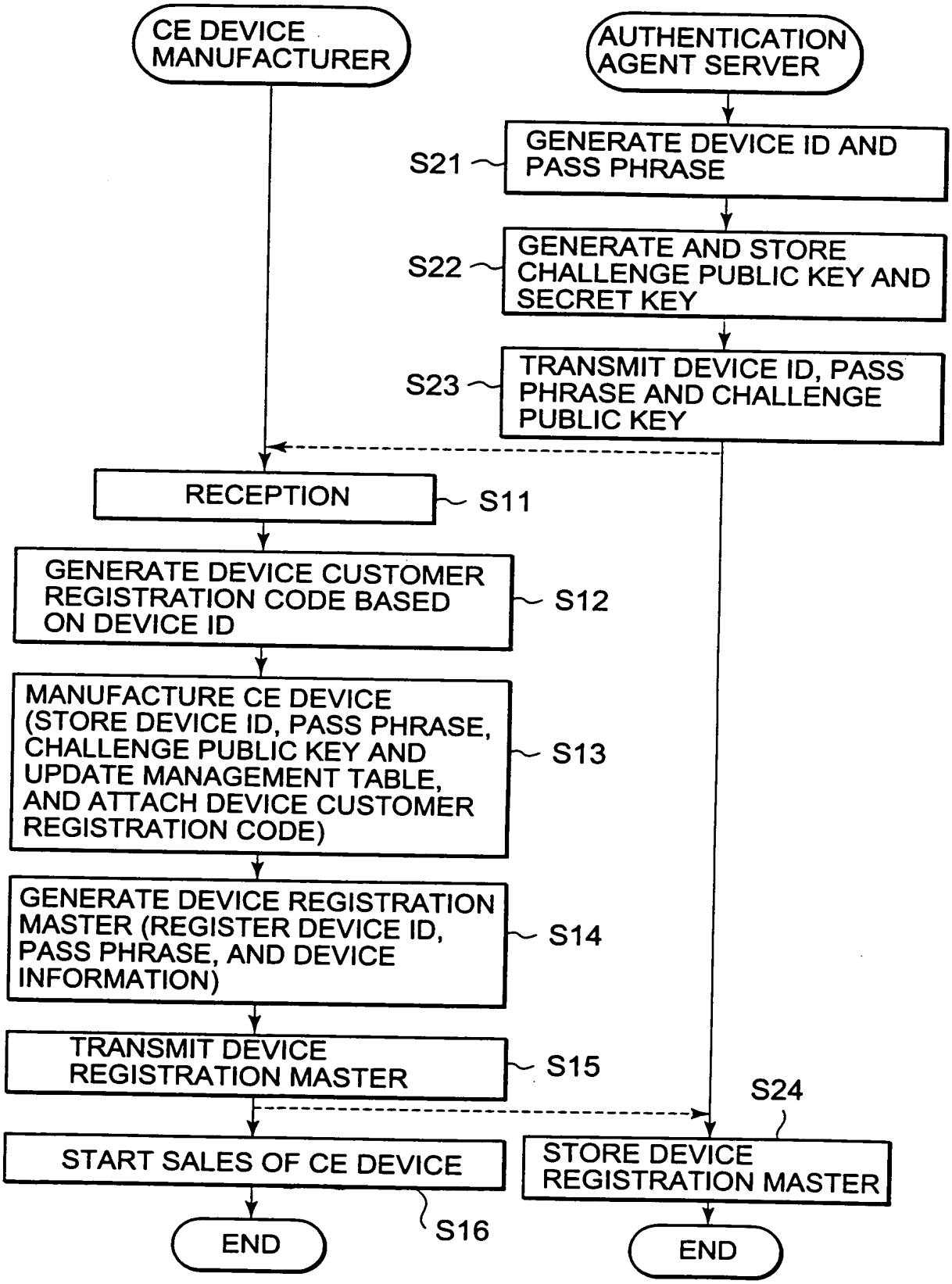

CE DEVICE MANUFACTURER
AUTHENTICATION AGENT SERVER
S21
GENERATE DEVICE ID AND PASS PHRASE
S22
GENERATE AND STORE CHALLENGE PUBLIC KEY AND SECRET KEY
S23
TRANSMIT DEVICE ID, PASS PHRASE AND CHALLENGE PUBLIC KEY
RECEPTION
S11
GENERATE DEVICE CUSTOMER REGISTRATION CODE BASED ON DEVICE ID
S12
MANUFACTURE CE DEVICE (STORE DEVICE ID, PASS PHRASE, CHALLENGE PUBLIC KEY AND UPDATE MANAGEMENT TABLE, AND ATTACH DEVICE CUSTOMER REGISTRATION CODE)
S13
GENERATE DEVICE REGISTRATION MASTER (REGISTER DEVICE ID, PASS PHRASE, AND DEVICE INFORMATION)
S14
TRANSMIT DEVICE REGISTRATION MASTER
S15
S24
START SALES OF CE DEVICE
STORE DEVICE REGISTRATION MASTER
S16
END
END

FIG. 8

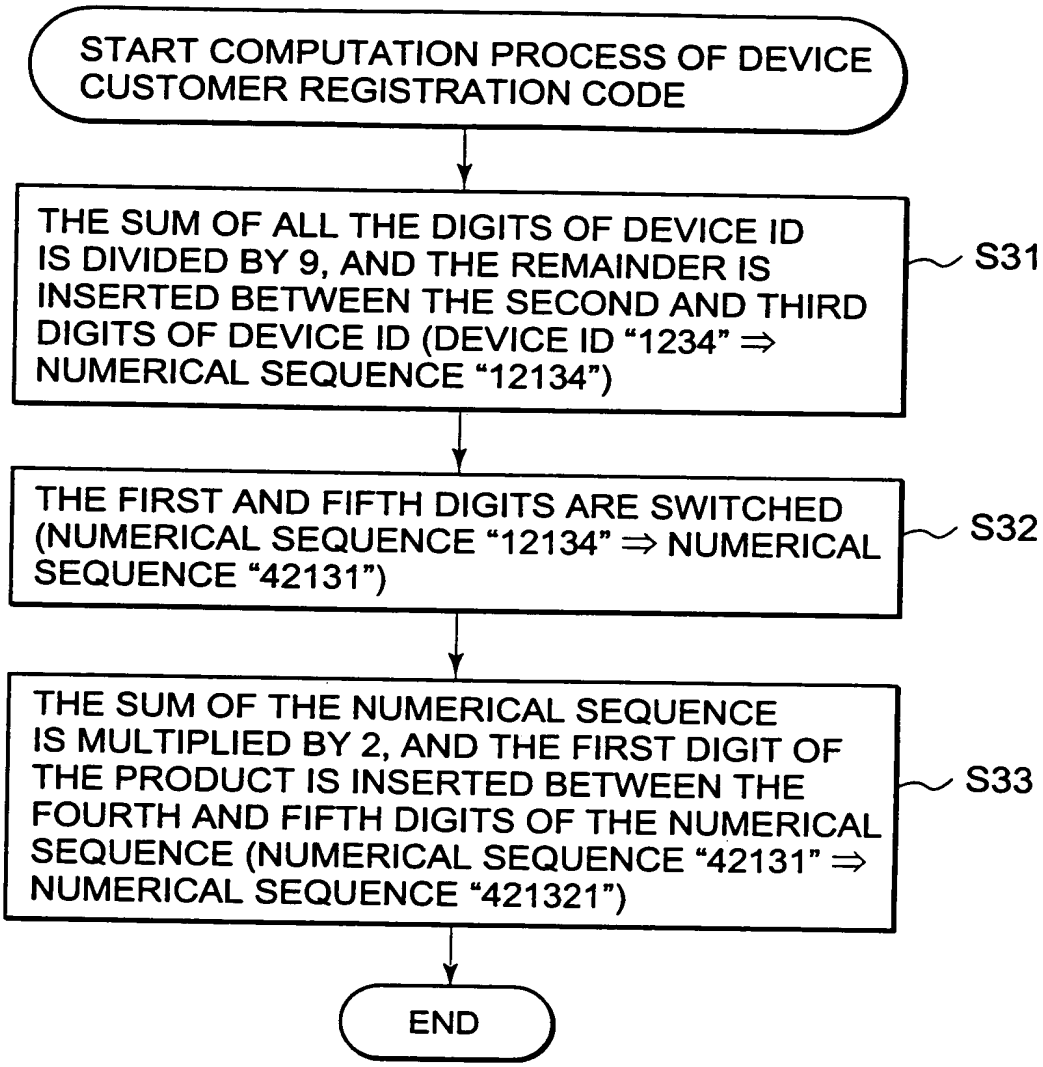

START COMPUTATION PROCESS OF DEVICE CUSTOMER REGISTRATION CODE
THE SUM OF ALL THE DIGITS OF DEVICE ID IS DIVIDED BY 9, AND THE REMAINDER IS INSERTED BETWEEN THE SECOND AND THIRD DIGITS OF DEVICE ID (DEVICE ID "1234" ⇒ NUMERICAL SEQUENCE "12134")
S31
THE FIRST AND FIFTH DIGITS ARE SWITCHED (NUMERICAL SEQUENCE "12134" ⇒ NUMERICAL SEQUENCE "42131")
S32
THE SUM OF THE NUMERICAL SEQUENCE IS MULTIPLIED BY 2, AND THE FIRST DIGIT OF THE PRODUCT IS INSERTED BETWEEN THE FOURTH AND FIFTH DIGITS OF THE NUMERICAL SEQUENCE (NUMERICAL SEQUENCE "42131" ⇒ NUMERICAL SEQUENCE "421321")
S33
END

FIG. 9

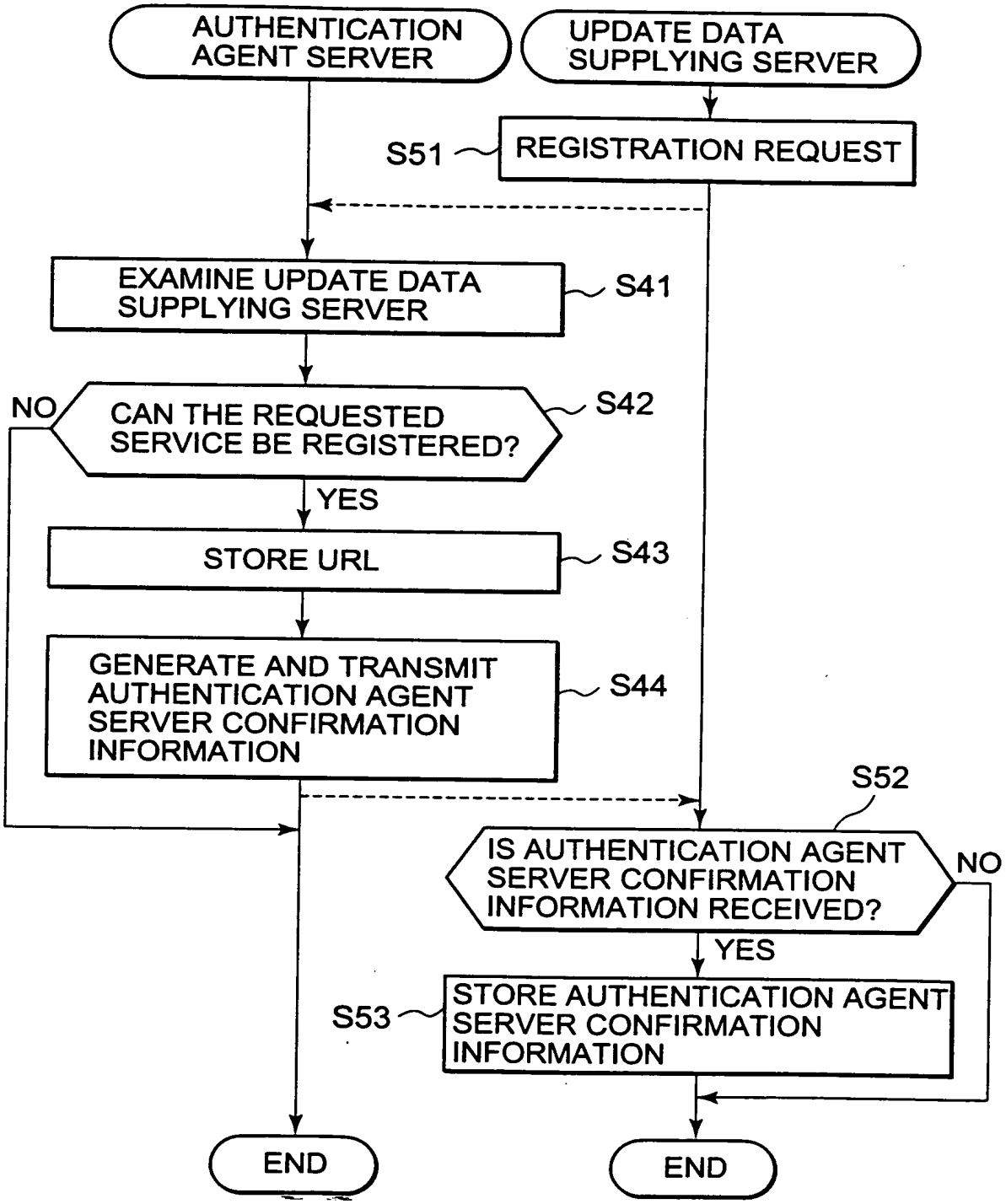

AUTHENTICATION AGENT SERVER
UPDATE DATA SUPPLYING SERVER
S51
REGISTRATION REQUEST
EXAMINE UPDATE DATA SUPPLYING SERVER
S41
NO
CAN THE REQUESTED SERVICE BE REGISTERED?
S42
YES
STORE URL
S43
GENERATE AND TRANSMIT AUTHENTICATION AGENT SERVER CONFIRMATION INFORMATION
S44
S52
IS AUTHENTICATION AGENT SERVER CONFIRMATION INFORMATION RECEIVED?
NO
YES
S53
STORE AUTHENTICATION AGENT SERVER CONFIRMATION INFORMATION
END
END

FIG. 10

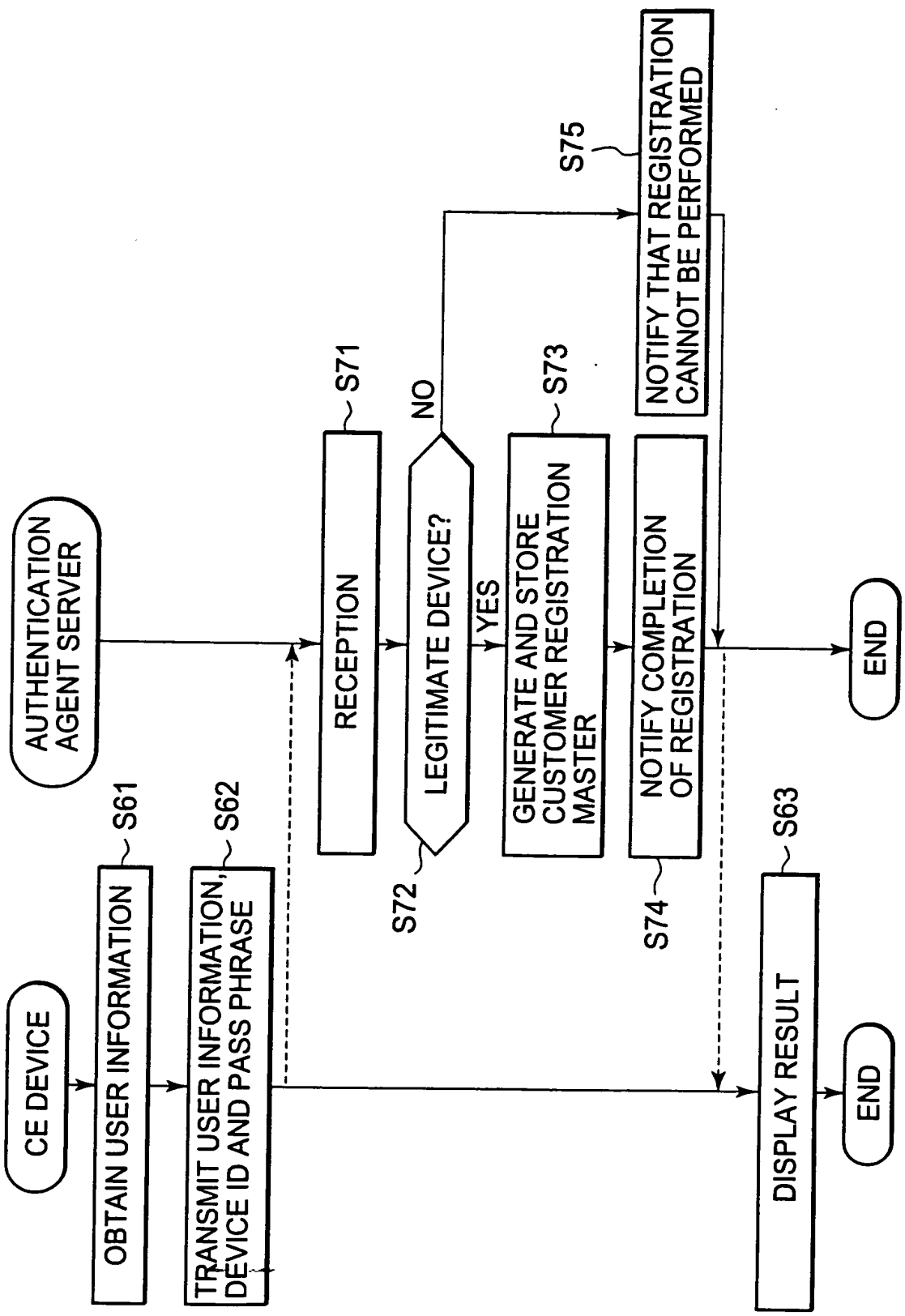

CE DEVICE
OBTAIN USER INFORMATION
S61
TRANSMIT USER INFORMATION, DEVICE ID AND PASS PHRASE
S62
AUTHENTICATION AGENT SERVER
RECEPTION
S71
LEGITIMATE DEVICE?
S72
NO
YES
S75
NOTIFY THAT REGISTRATION CANNOT BE PERFORMED
GENERATE AND STORE CUSTOMER REGISTRATION MASTER
S73
NOTIFY COMPLETION OF REGISTRATION
S74
END
DISPLAY RESULT
S63
END

FIG. 11

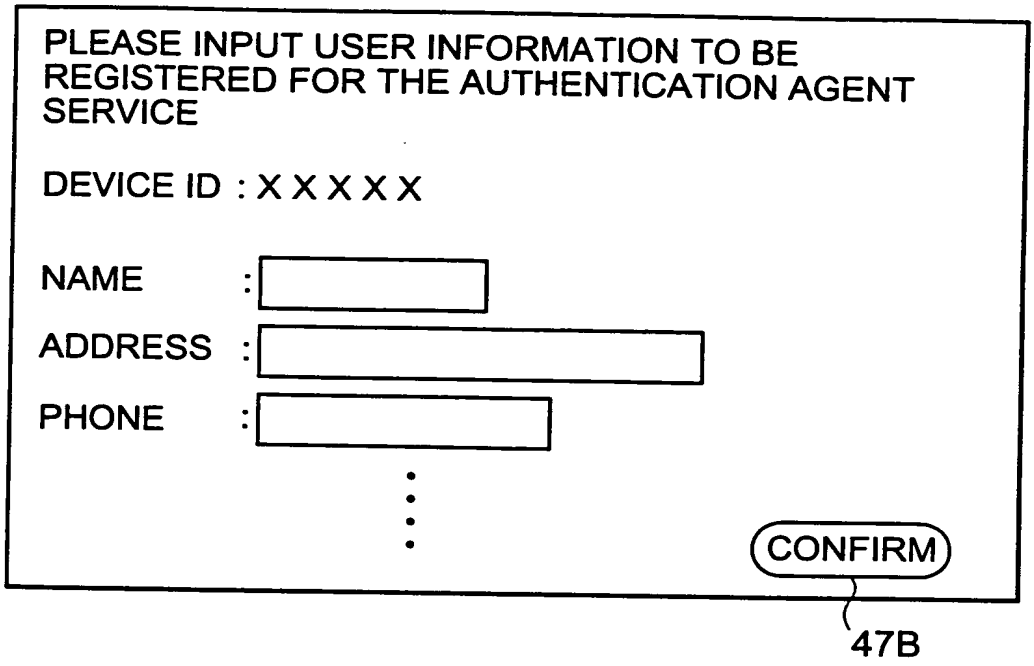

PLEASE INPUT USER INFORMATION TO BE REGISTERED FOR THE AUTHENTICATION AGENT SERVICE
DEVICE ID : X X X X X
NAME :
ADDRESS :
PHONE :
CONFIRM
47B

FIG. 12

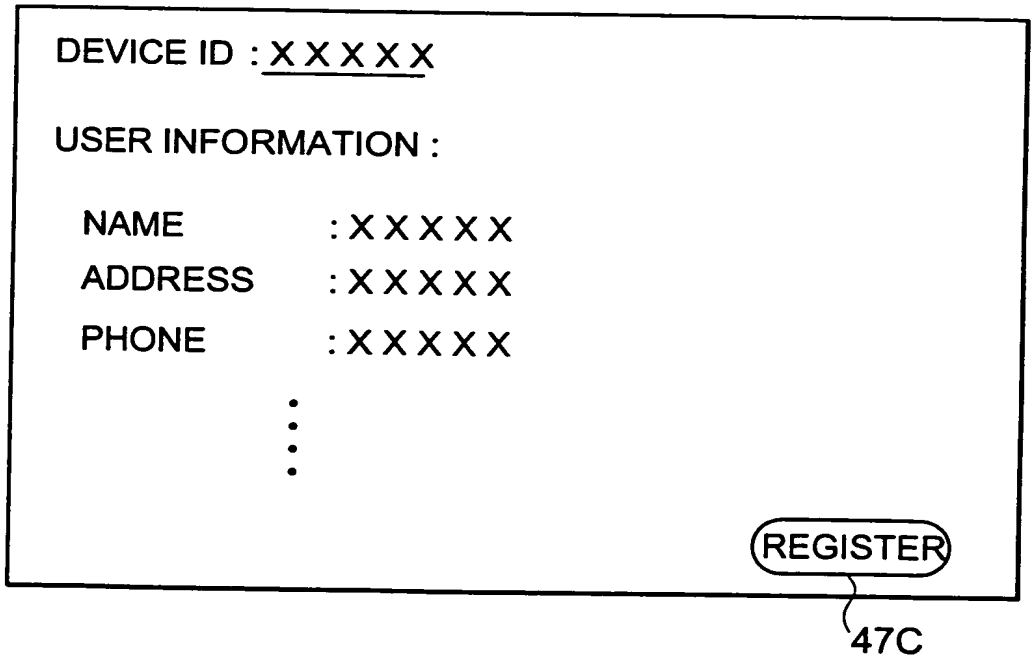

DEVICE ID : X X X X X
USER INFORMATION :
NAME : X X X X X
ADDRESS : X X X X X
PHONE : X X X X X
REGISTER
47C

FIG. 13

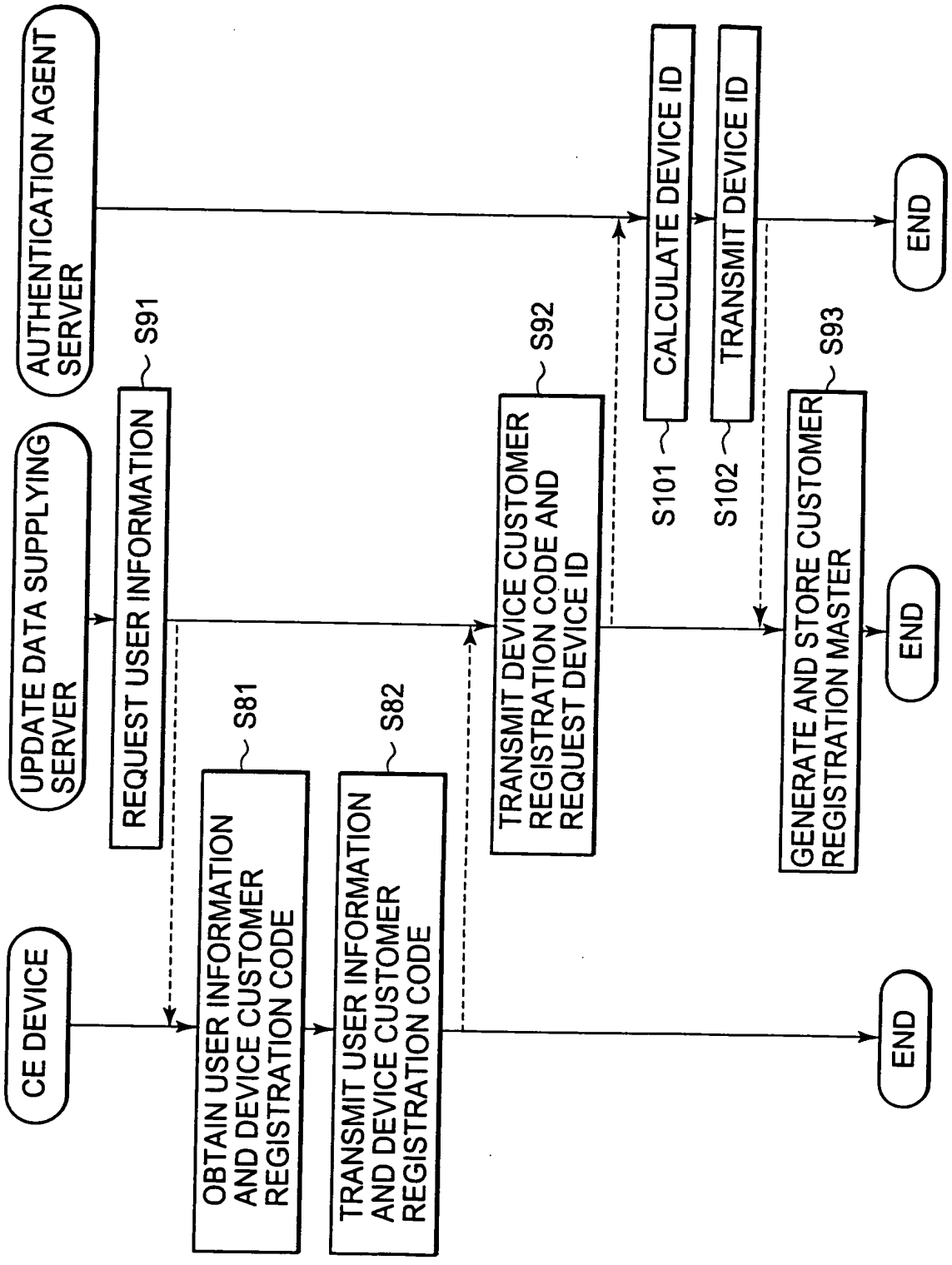

CE DEVICE
UPDATE DATA SUPPLYING SERVER
AUTHENTICATION AGENT SERVER
REQUEST USER INFORMATION
S91
OBTAIN USER INFORMATION AND DEVICE CUSTOMER REGISTRATION CODE
S81
TRANSMIT USER INFORMATION AND DEVICE CUSTOMER REGISTRATION CODE
S82
TRANSMIT DEVICE CUSTOMER REGISTRATION CODE AND REQUEST DEVICE ID
S92
CALCULATE DEVICE ID
S101
TRANSMIT DEVICE ID
S102
GENERATE AND STORE CUSTOMER REGISTRATION MASTER
S93
END
END
END

FIG. 14

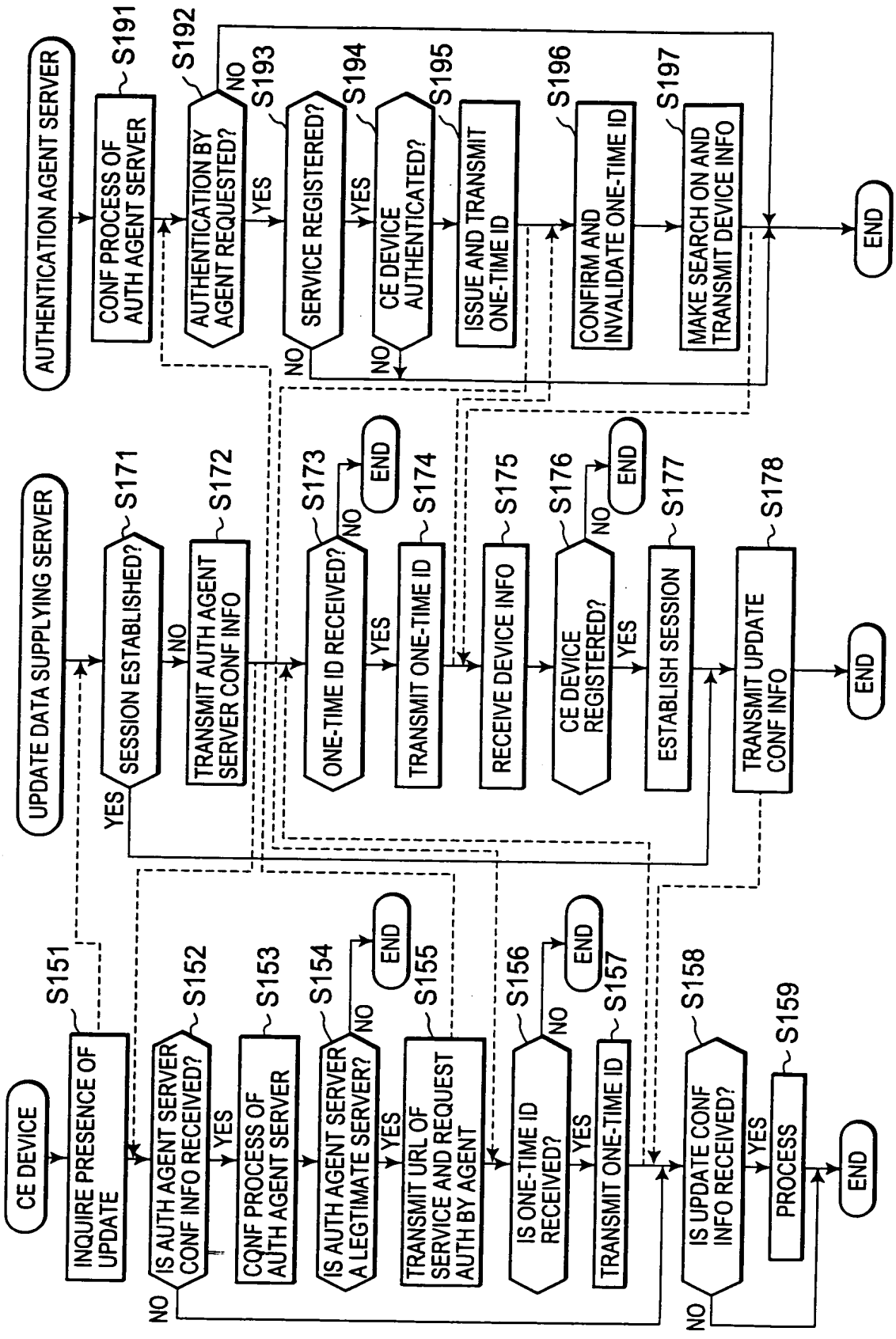

CE DEVICE
INQUIRE PRESENCE OF UPDATE
S151
IS AUTH AGENT SERVER CONF INFO RECEIVED?
S152
NO
YES
CONF PROCESS OF AUTH AGENT SERVER
S153
IS AUTH AGENT SERVER A LEGITIMATE SERVER?
S154
NO
END
YES
TRANSMIT URL OF SERVICE AND REQUEST AUTH BY AGENT
S155
IS ONE-TIME ID RECEIVED?
S156
NO
END
YES
TRANSMIT ONE-TIME ID
S157
IS UPDATE CONF INFO RECEIVED?
S158
NO
YES
PROCESS
S159
END
UPDATE DATA SUPPLYING SERVER
SESSION ESTABLISHED?
S171
YES
NO
TRANSMIT AUTH AGENT SERVER CONF INFO
S172
ONE-TIME ID RECEIVED?
S173
NO
END
YES
TRANSMIT ONE-TIME ID
S174
RECEIVE DEVICE INFO
S175
CE DEVICE REGISTERED?
S176
NO
END
YES
ESTABLISH SESSION
S177
TRANSMIT UPDATE CONF INFO
S178
END
AUTHENTICATION AGENT SERVER
CONF PROCESS OF AUTH AGENT SERVER
S191
AUTHENTICATION BY AGENT REQUESTED?
S192
NO
YES
SERVICE REGISTERED?
S193
NO
YES
CE DEVICE AUTHENTICATED?
S194
NO
YES
ISSUE AND TRANSMIT ONE-TIME ID
S195
CONFIRM AND INVALIDATE ONE-TIME ID
S196
MAKE SEARCH ON AND TRANSMIT DEVICE INFO
S197
END

FIG. 15

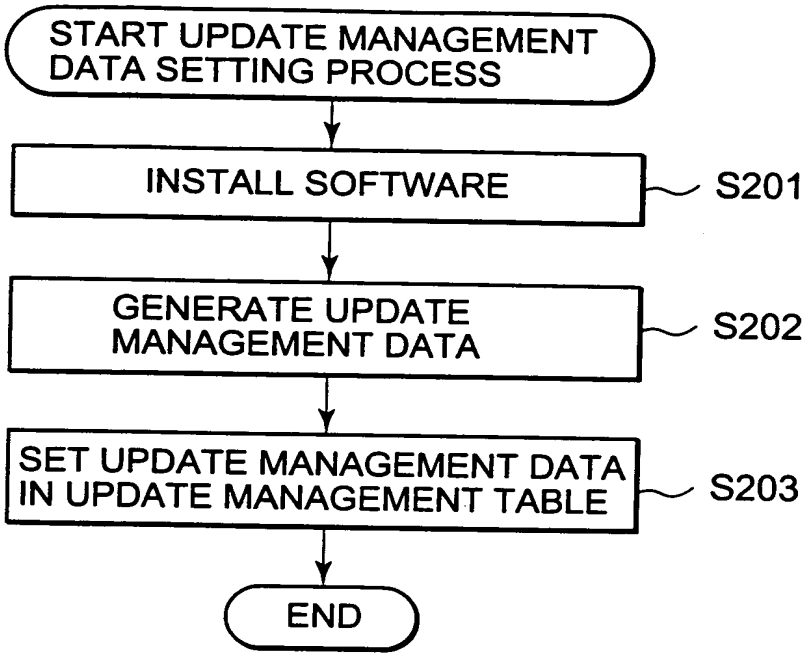

START UPDATE MANAGEMENT DATA SETTING PROCESS
INSTALL SOFTWARE
S201
GENERATE UPDATE MANAGEMENT DATA
S202
SET UPDATE MANAGEMENT DATA IN UPDATE MANAGEMENT TABLE
S203
END

FIG. 16

NAME OF SOFTWARE	SOFTWARE ID	VERSION NUMBER	CONFIRMATION CYCLE	URL OF UPDATE DATA SUPPLYING SERVER
NAME OF SOFTWARE A	XXXXX	XX	EVERY DAY (10:00)	XXXX
NAME OF SOFTWARE B	XXXXX	XX	EVERY MONDAY (11:00)	XXXX
NAME OF SOFTWARE C	XXXXX	XX	ON THE 1st DAY OF EVERY MONTH (12:00)	XXXX
NAME OF SOFTWARE D	XXXXX	XX	EVERY DAY (14:00)	XXXX

FIG. 17

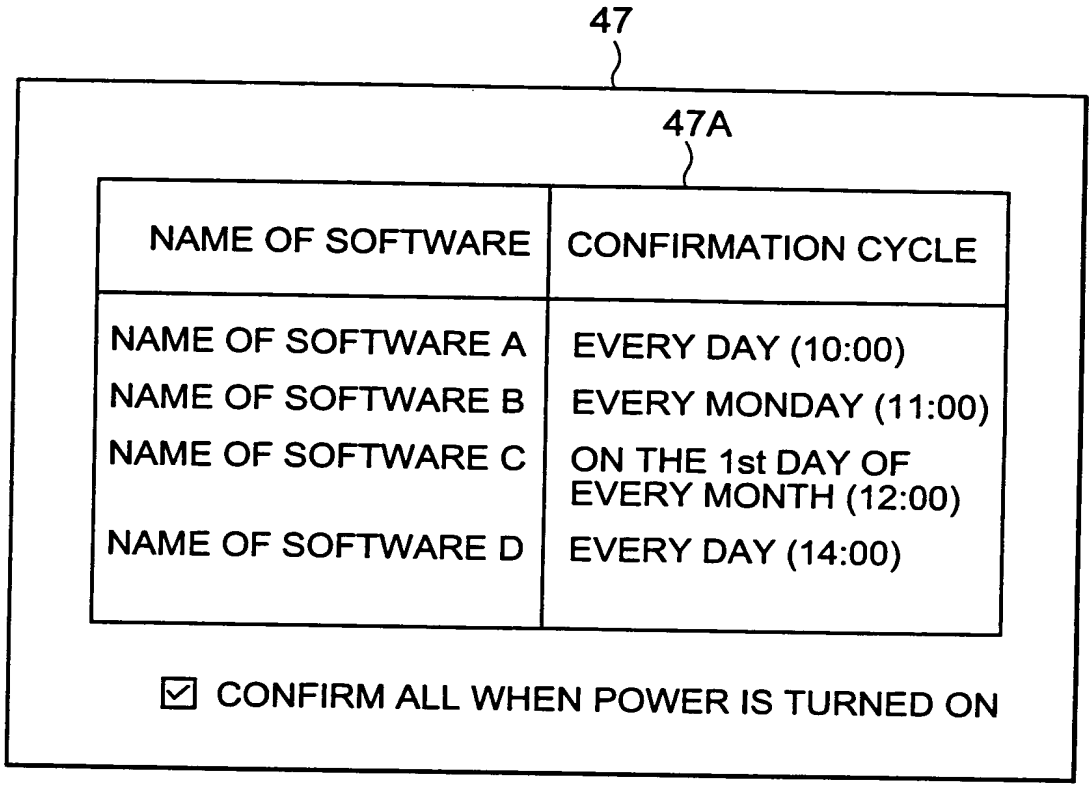

47
47A
NAME OF SOFTWARE
CONFIRMATION CYCLE
NAME OF SOFTWARE A
EVERY DAY (10:00)
NAME OF SOFTWARE B
EVERY MONDAY (11:00)
NAME OF SOFTWARE C
ON THE 1st DAY OF EVERY MONTH (12:00)
NAME OF SOFTWARE D
EVERY DAY (14:00)
☑ CONFIRM ALL WHEN POWER IS TURNED ON

FIG. 18

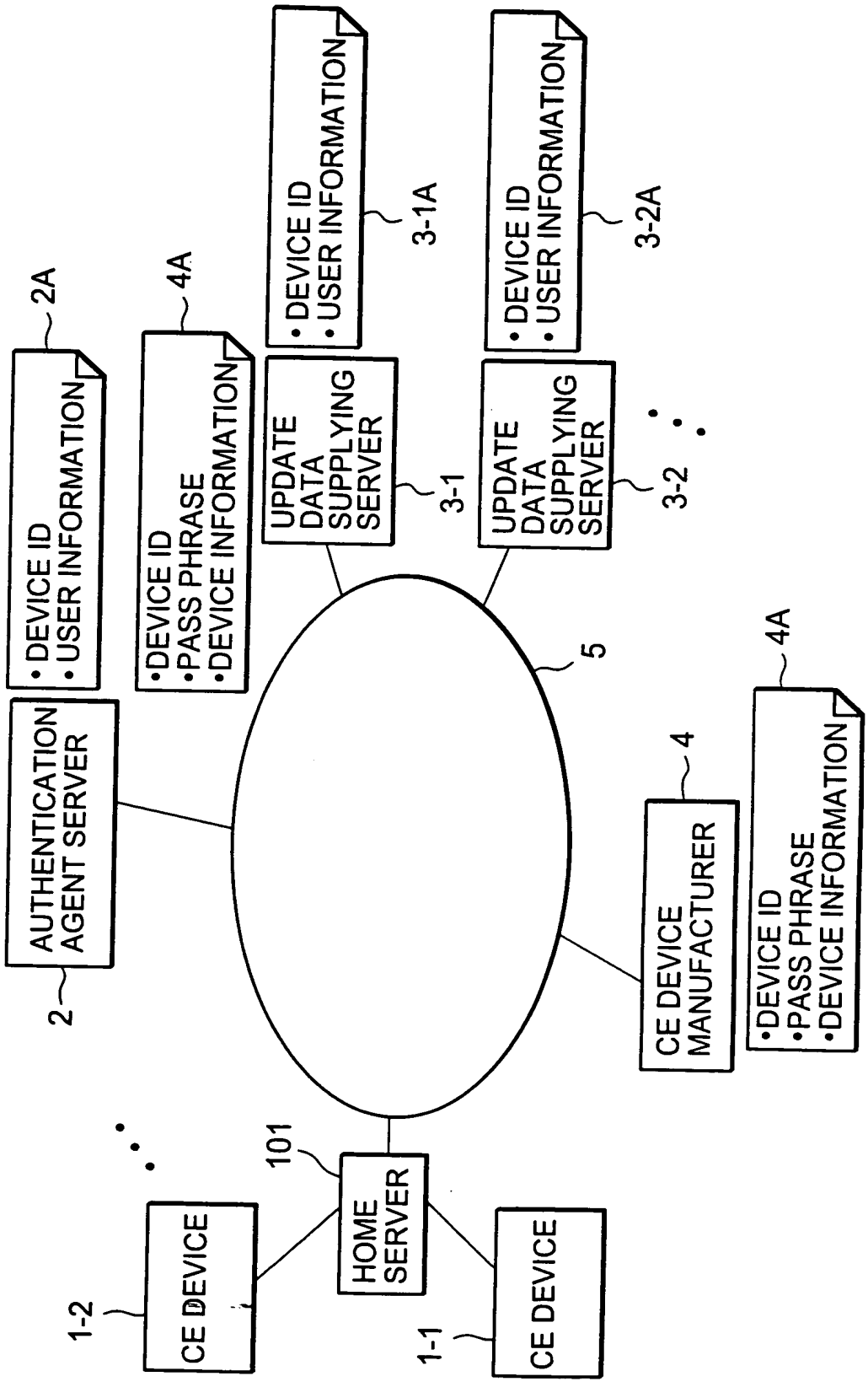

AUTHENTICATION AGENT SERVER
2
• DEVICE ID
• USER INFORMATION
2A
• DEVICE ID
• PASS PHRASE
• DEVICE INFORMATION
4A
UPDATE DATA SUPPLYING SERVER
3-1
• DEVICE ID
• USER INFORMATION
3-1A
UPDATE DATA SUPPLYING SERVER
3-2
• DEVICE ID
• USER INFORMATION
3-2A
5
CE DEVICE MANUFACTURER
4
• DEVICE ID
• PASS PHRASE
• DEVICE INFORMATION
4A
HOME SERVER
101
CE DEVICE
1-1
CE DEVICE
1-2

FIG. 19

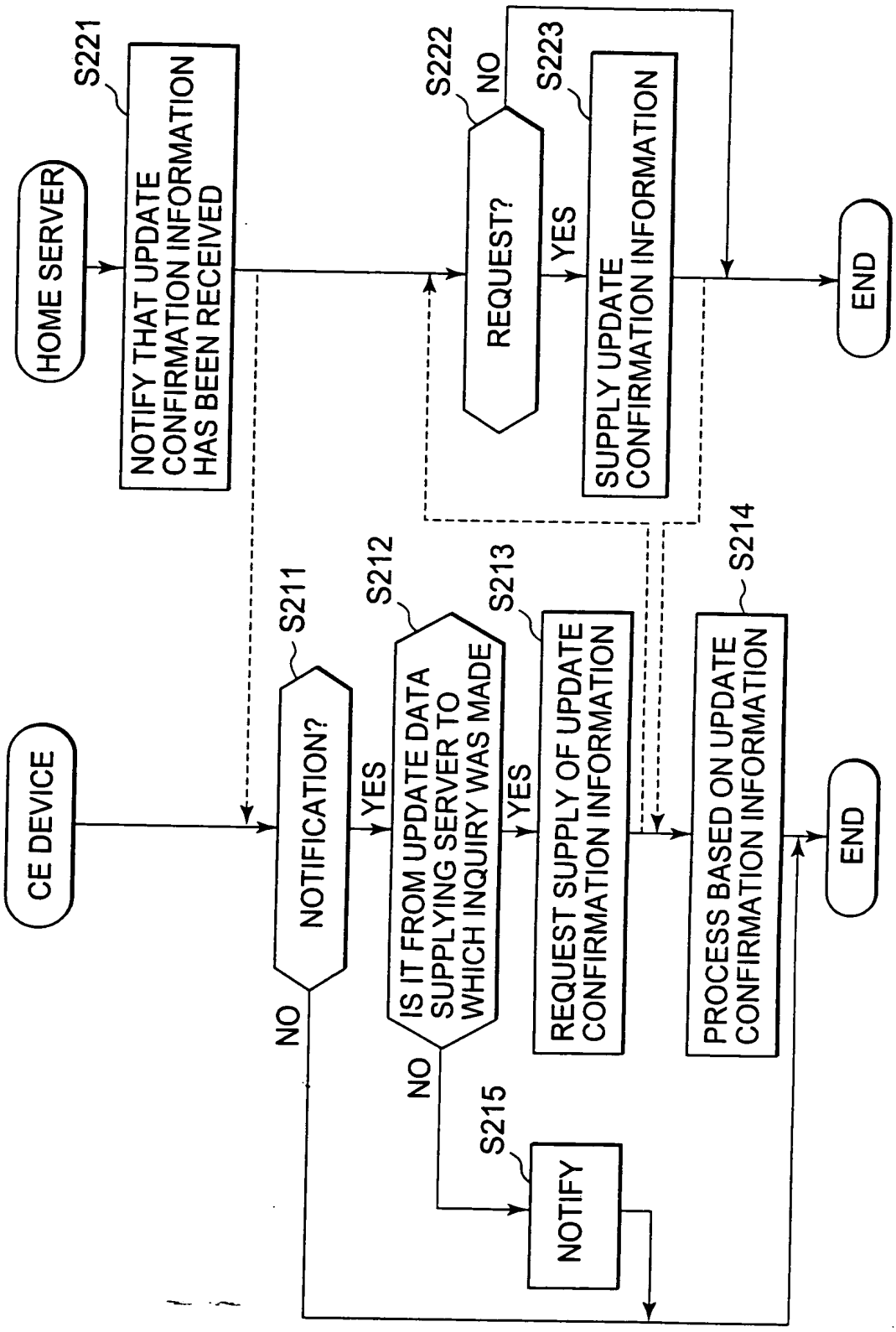
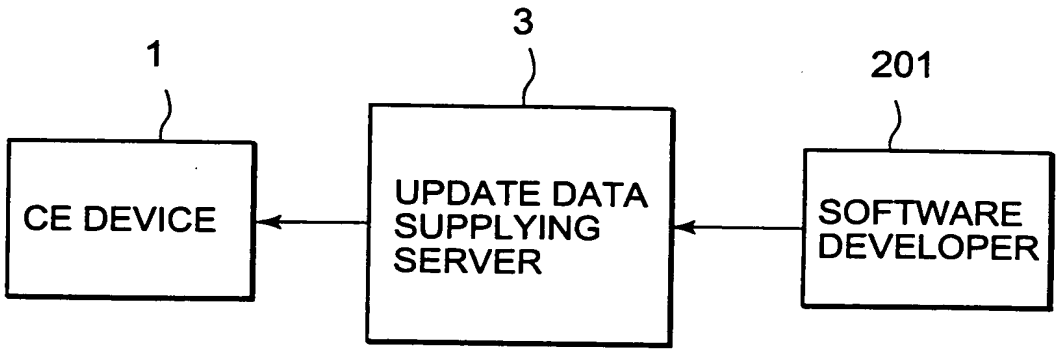

HOME SERVER
S221
NOTIFY THAT UPDATE CONFIRMATION INFORMATION HAS BEEN RECEIVED
S222
NO
REQUEST?
YES
S223
SUPPLY UPDATE CONFIRMATION INFORMATION
END
CE DEVICE
S211
NOTIFICATION?
YES
S212
IS IT FROM UPDATE DATA SUPPLYING SERVER TO WHICH INQUIRY WAS MADE
YES
S213
REQUEST SUPPLY OF UPDATE CONFIRMATION INFORMATION
S214
PROCESS BASED ON UPDATE CONFIRMATION INFORMATION
END
NO
NO
S215
NOTIFY

FIG. 20


1
3
201
CE DEVICE
UPDATE DATA SUPPLYING SERVER
SOFTWARE DEVELOPER